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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,520	01/03/2001	Michio Masuda	Q62568	9986

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08/11/2005

SUGHRUE, MION, ZINN, MACPEAK & SEAS
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037

EXAMINER

PWU, JEFFREY C

ART UNIT	PAPER NUMBER
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2143

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/752,520

Applicant(s)

MASUDA ET AL.

Examiner

Jeffrey C. Pwu

Art Unit

2143

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 22-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Art Unit: 2143

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 22-25 and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Dharanikota (U.S. 6,914,883).

Dharanikota teaches claims:

22. A multi-layer class identifying communication apparatus, which is provided with an input interface connected to input communication lines, a switch circuit and an output interface connected to output communication lines, and has a capability of allocating a plurality of IP-QOS (Internet Protocol-Quality-of-Service) codes from information contained in a packet data received through one of said input communication lines, said apparatus comprising:

- an allocating section provided in said input interface, which allocates said IP-QOS codes based on a combination of information contained in an IP packet header and a TCP header defined by an OSI reference model (col.7, lines 28-43); and
- a priority control section, which carries out a delay priority control and a discard priority control depending on a delay class and a discard class respectively, and each

Art Unit: 2143

class corresponding to any of said IP-QoS codes allocated by said allocating section.

(col.8, lines 28-41)

23. The multi-layer class identifying communication apparatus according to claim 22, said priority control section further comprises:

- a first priority control section provided in said input interface, which controls a priority of request sending for said IP packet switching by said switch unit depending on an internal delay class corresponding to any of said IP-QoS codes, and controls discarding of EP packet depending on a discard control class corresponding to any of said IP-QoS codes when available memory area of a reception side payload memory to be used for writing an input IP packet becoming short ("A plurality of QoS metrics or measurements are preferably used for quantifying the service requirements of a particular SLA. Well known QoS metrics include bandwidth (BW), throughput, delay, jitter (i.e., delay variation), cost, loss probability or packet loss rate, et cetera. These QoS metrics may be categorized into three types: additive, multiplicative, and concave. Let $m(n1, n2)$ be a metric for link $(n1, n2)$. For any path $P=(n1, n2, \dots, ni, nj)$, where $n1, n2, \dots, nj$ represent network nodes, metric m is additive if $m(P)=m(n1, n2)+m(n2, n3)+\dots+m(ni, nj)$. Examples are delay, jitter, cost, and hop-count. For instance, the delay of a path is the sum of delay of every hop. Metric m is multiplicative if $m(P)=m(n1, n2)*m(n2, n3)*\dots*m(ni, nj)$. An example of a multiplicative metric is reliability, in which case $0 \leq m(P) \leq 1$. Metric m is concave if $m(P)=\min[m(n1, n2), m(n2, n3), \dots, m(ni, nj)]$. Available bandwidth is an example of a concave metric,

where the bandwidth of a path is determined by the link hop with the minimum available bandwidth."); and

- second priority control section provided in said output interface, which controls a priority of IP packet sending from respective queue buffers corresponding to any of said IP-QOS codes, and controls discarding of IP packet stored in said queue buffers depending on said IP-QOS code and a length of queue data stored. (col.8, lines 28-41)

24. The multi-layer class identifying communication apparatus according to claim 22, wherein said allocating section comprises:

- a first search means, to which header information of said IP packet and said TCP packet is input and a plurality of key information are retrieved for a second searching; and a second search means to be used as second searching, for retrieving an address information of external memory, in which said IP-QOS codes are registered, by using said key information retrieved from said first search means. (col.7, line 65-col.8, line10)

25. The multi-layer class identifying communication apparatus according to claim 22, further comprising:

- an IP-QOS class scheduler provided in said output interface, which carries out a first scheduling function for the highest priority IP-IQOS code among said IP-QOS codes for transmitting said IP packet stored in said queue buffer corresponding to said highest priority IPQOS code, a second scheduling function for the rest of priority IP-QOS codes for transmitting said IP packet stored in respective queue buffers corresponding to the

Art Unit: 2143

rest of priority EP-QOS codes by control of Weighted Round Robin (WRR) scheduling method, and a fixed priority scheduling method as a third scheduling function for the priority IP-QOS code applied for said second scheduling function. ("L4 processing 308 involves Multi-Field (MF) classification, wherein a searching key is constructed based on multiple fields of IP and TCP headers and a software managed tree (SMT) search is then performed. Once the processing is completed and the contents of the FCB page fields are filled in, the frame is enqueued in the ingress scheduler for scheduling towards the switch fabric (reference numeral 310). At the transmission time (after the frame has been scheduled), appropriate HW constructs a Frame Header (FH) and Cell Header (CH) based on the FCB fields, and the data is read from the ingress buffer and sent to the switch fabric in the form of cells having a predesignated format (reference numeral 312).")

27. A multi-layer class identifying communication method, in an apparatus provided with an input interface connected to input communication lines, a switch circuit and an output interface connected to output communication lines, and has a capability of allocating a plurality of IP-QOS (Internet-Protocol-Quality-of-Service) codes from information contained in a packet data received through one of said input communication lines, said method comprising:

- allocating said IP-QOS codes based on a combination of information contained in an IP packet header and a TCP header defined by an OSI reference model by an allocating section provided in said input interface (col.7, lines 28-43); and

Art Unit: 2143

- carrying out a delay priority control and a discard priority control depending on a delay class and a discard class respectively, and each class corresponding to any of said IP-QOS codes allocated by said allocating section by a priority control section. (col.8, lines 28-41)

28. The multi-layer class identifying communication method according to claim 27, said carrying out further comprises:

- controlling a priority of request sending for said IP packet switching by said switch unit depending on an internal delay class corresponding to any of said IP-QOS codes;
- controlling discarding of IP packet depending on a discard control class corresponding to any of said IP-QOS codes when available memory area of a reception side payload memory to be used for writing an input IP packet becoming short (col.8, lines 28-41);

and

- controlling a priority of IP packet sending from respective queue buffers corresponding to any of said IP-QOS codes, and controls discarding of IP packet stored in said queue buffers depending on said IP-QOS code and a length of queue data stored. (col.8, lines 28-41)

29. The multi-layer class identifying communication method according to claim 27, wherein said allocating comprises:

- receiving header information of said IP packet and said TCP packet is input;

- retrieving a plurality of key information for a second searching; and retrieving an address information of external memory, in which said IP-QOS codes are registered, by using said retrieved key information. (col.7, line 65-col.8, line10)

30. The multi-layer class identifying communication method according to any of claim 27, further comprising:

- carrying out a first scheduling function for the highest priority IP-QOS code among said IP-QOS codes for transmitting said IP packet stored in said queue buffer corresponding to said highest priority IP-QOS code, a second scheduling function for the rest of priority IP-QOS codes for transmitting said IP packet stored in respective queue buffers corresponding to the rest of priority IP-QOS codes by control of Weighted Round Robin (WRR) scheduling method, and a fixed priority scheduling method as a third scheduling function for the priority IP-QOS code applied for said second scheduling function. ("L4 processing 308 involves Multi-Field (MF) classification, wherein a searching key is constructed based on multiple fields of IP and TCP headers and a software managed tree (SMT) search is then performed. Once the processing is completed and the contents of the FCB page fields are filled in, the frame is enqueued in the ingress scheduler for scheduling towards the switch fabric (reference numeral 310). At the transmission time (after the frame has been scheduled), appropriate HW constructs a Frame Header (FH) and Cell Header (CH) based on the FCB fields, and the data is read from the ingress buffer and sent to the switch fabric in the form of cells having a predesignated format (reference numeral 312).")

Allowable Subject Matter

3. Claims 26 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments with respect to claims 22-31 have been considered but are moot in view of the new ground(s) of rejection.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey C. Pwu whose telephone number is 571-272-6798.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2143

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



8/6/05

JEFFREY PWU
PRIMARY EXAMINER